



Job Loss Analysis

Control No: 2000116_____ Status: Closed_____ Original Date: 07 July 2010

Last Date Closed: 8/2/10

Organization: GMfg

JLA Type: Global Mfg Shared / Richmond & Salt Lake Refineries

Work Type: Technical (Process Engineering)

Work Activity: Development of Scope Input for Turnarounds

Personal Protective Equipment (PPE)

<input type="checkbox"/> Goggles	<input type="checkbox"/> Hearing Protection	<input type="checkbox"/> Warning Device	<input type="checkbox"/> Gloves(<u>Nitrile, rubber, leather</u>)
<input type="checkbox"/> Face Shields	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Tagout/Lockout kit	<input type="checkbox"/> Other
<input type="checkbox"/> Safety Glasses	<input type="checkbox"/> Safety Shoes	<input type="checkbox"/> Hi Viz Jacket	<input type="checkbox"/> Other _____
<input type="checkbox"/> Safety Back Belt	<input type="checkbox"/> Safety Cones	<input type="checkbox"/> Welding Hood	<input type="checkbox"/> Other _____

Reviewers

Reviewer Name	Position	Date Approved
Allan Zieber	Salt Lake Refinery Process Lead,	5/11/10
Michelle Johansen	Richmond-JLA global development team leader PED /Process Engineering Manager	8/2/10
Aaron Sims	Richmond Lead Engineer	7/30/10

Development Team

Development Team Member Name	Primary Contact	Position
K Kabler	X 242-1288	RI Process Engineer
C Odumah	X 242-1114	RI Process Engineer
A Lovano	X 242-3743	RI Process Engineer

Job Steps

No.	Job Steps	Potential Hazard	Critical Actions
1	Conduct an Intensive Process Review (IPR)/Reliability Opportunity Investigation (ROI) with the Subject Matter Expert (SME) or BIN Leader and read the post mortem reports to develop job lists for the IPR. Review action items/comments for last IPR/ROI/HAZOP/PHA/BP audits.	<ol style="list-style-type: none"> 1. Missed opportunity to add improvements/modifications to the plant. 2. Missed opportunity to implement best practices, leading to a loss profit incident. 	<ol style="list-style-type: none"> 1a. Speak to the SME or BIN leader to schedule an IPR according to the IMPACT milestone process. Recommend at least 24 months to give time to develop IPR items into scoped items for TA. 1a. Review Shutdown post mortem reports (last 2 shutdowns if available), pertinent Job Log Items, Unit Reliability Briefs, and Process Engineering Turnover documents before the IPR. 2a. Discuss new best practices with the SME or BIN leader. 2b. Ensure all stakeholders are present during the IPR.
2	Perform a furnace evaluation	<ol style="list-style-type: none"> 1. Inefficient furnace operation post turnaround/possible unplanned shutdown. 2. Failure to perform furnace evaluations can lead to a significant turnaround delay due to the addition of unplanned work. 	<ol style="list-style-type: none"> 1a. Identify tubes that need to be de-coked. 1b. Determine if fins on the convection tubes need to be cleaned. 2a. Identify constraints/optimization in the furnace operation, both energy, environmental, and process-related, and recommend projects to alleviate constraints. Use tools such as IR Scans, PMO data, and furnace expert to perform evaluation. If unit has an SCR, check DPs. 2b. Ensure IMPACT has a list of failed skin TI's. 2c. Determine if burner parts/tips that cannot be cleaned OTR need to be cleaned or replaced.

3	Perform column evaluations	<ol style="list-style-type: none"> 1. Failure to perform column evaluations can lead to a significant turnaround delay due to the addition of unplanned work. 2. Sub-optimal operation of the column post turnaround leading to Lost Profit Opportunity or unplanned shutdown. 	<p>Determine if:</p> <ol style="list-style-type: none"> 1. Column internals are in place. This can be done with gamma scans/on stream instrumentation review/use of process model runs vs. actual operation. 2a. The column needs to be cleaned, or have internals replaced/upgraded because of degradation in distillation performance or changes in economic drivers for separation. 2b. Identify constraints/optimization for column performance, both energy and process-related, and recommend projects to address items. Use tools such as column gamma scans, PMO data, and distillation expert to perform evaluation. 2c. Ensure IMPACT has a list of failed TI's and PI's.
4	Perform exchanger evaluations	<ol style="list-style-type: none"> 1. Sub-optimal operation of the heat exchangers post turnaround. 2. Lost Profit Opportunity, Possible unplanned shutdown. 3. Failure to perform exchanger evaluations can lead to a significant turnaround delay due to the addition of unplanned work. 4. Failure to identify opportunities to improve exchanger performance monitoring. 5. Incomplete economic evaluation leading to missed or unnecessary TAR work. 	<p>Determine if:</p> <ol style="list-style-type: none"> 1. Exchangers need to be cleaned. Use tools such as Hexmon, PMO, and IR scans to determine exchanger fouling rates, flow distribution, and cleaning requirements. 2. Bundle needs to be replaced. 3. Perform economic evaluation to determine the cost of replacing/modifying the exchanger versus the cost to the business if the necessary work was not completed. 4. TIs/PIs/Flow meters need to be installed to provide adequate info for PMO 5. Determine whether there are any opportunities to upgrade heat exchanger metallurgy or design to improve performance (e.g. corrosion resistance, energy efficiency and fouling prevention). Consult SME or BIN Leader if applicable.

5	Perform reactor catalyst evaluation	<ol style="list-style-type: none"> 1. Failure to perform catalyst evaluation can result in no activity in the catalyst post turnaround, which will lead to off spec product. 2. Unplanned shutdown to change catalyst. 3. Catalyst doesn't perform as expected. 	<ol style="list-style-type: none"> 1. Define length of the next catalyst run, along with any modifications to the product specifications over the run. 2. Determine if the catalyst needs to be replaced. Use BIN leader, catalyst manager tool and PMO if available to determine catalyst replacement needs. 3. Consult catalyst vendors if applicable, and request pilot plant testing of the catalyst
6	Perform process control evaluation	<ol style="list-style-type: none"> 1. Sub-optimal control of plant 2. Possible unplanned shutdown due to control failure. 	<p>Determine if:</p> <ol style="list-style-type: none"> 1. Critical valves need to be replaced, rebuilt, or resized. Review with plant Process Control Engineer. 2. Critical orifice plates need to be resized or replaced for mass balance closure.
7	Perform unit specific equipment evaluation	<ol style="list-style-type: none"> 1. Lost Profit Opportunity, possible unplanned shutdown. 	<ol style="list-style-type: none"> 1. Determine if unit specific equipment such as demisters, coalescers, desalters, contactors, regenerators, etc. need to be upgraded, repaired, or replaced.
8	Perform auxiliary equipment evaluation	<ol style="list-style-type: none"> 1. Lost Profit Opportunity, possible unplanned shutdown. 	<ol style="list-style-type: none"> 1. Determine if auxiliary or off plot equipment such as cooling towers, fuel gas, lube oil, seal oil, utilities systems, etc. need to be upgraded, repaired, or replaced.
9	Review shutdown recommendations with PE Lead or Senior Engineer.	<ol style="list-style-type: none"> 1. Items could be removed or left off of the shutdown checklist. 	<ol style="list-style-type: none"> 1. Review recommendations with PE Lead or Senior Engineer to ensure all items are submitted with supporting documentation.